

**DIRECTORATE FOR EDUCATION AND SKILLS
PROGRAMME ON INSTITUTIONAL MANAGEMENT IN HIGHER EDUCATION**

Governing Board

WHAT IT MEANS FOR HIGHER EDUCATION – QUARTERLY BRIEFS 2013: ISSUES 1, 2 AND 3

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What it means for higher education

Long-term economic outlook

What does the world's economic future hold?

- By 2050:
 - ❑ China and India will produce half the world's output: OECD countries' share will shrink to around 40%
 - ❑ China and India can expect a six-fold increase in living standards, while even the poorest countries can expect to see a four-fold increase
 - ❑ Over 30% of the OECD population will be 60 years or older and 9% will be 80 year or older
- Sustained fiscal consolidation will be needed to stabilise public debt, while public expenditures will be under pressure from ageing populations in OECD countries
- Bolder structural reforms to product markets and increased labour participation would lead to stronger economic outcomes

What could it mean for higher education?

- Higher education can play a major role in generating long-run growth by delivering relevant skills for productivity growth. But to be effective, higher education needs to focus on delivering relevant learning outcomes for students and ensure quality.
- Social cohesion is also needed to underpin long-term growth prospects – it is not an optional extra. Higher education can help in promoting social mobility by ensuring access to disadvantaged students and by developing the skills and values that support social outcomes in all students.
- Higher education will face major global shifts in demand and supply as emerging economies, especially China and India, become the main powerhouses of economic growth with rapidly rising living standards. The already-rapid expansion of higher education in Asian countries is likely to continue. In sheer numbers, China and India and other emerging economies will soon dominate the global higher education sector.
- Younger student cohorts will shrink in coming decades in many countries, but older cohorts will expand. Older cohorts will have different skill development needs and priorities – and different expectations of higher education. Ageing populations will also affect the demand for products and services – and the skills needed to produce them.
- Sustained pressure on public finances mean that higher education will need look for new approaches to funding, more effective ways to manage costs and to enhance the value-for-money of higher education.
- Innovation and technological change will continue to drive economic progress forward and much of tomorrow's technology has already been developed somewhere within higher education research programmes. Innovation will open up many new possibilities – and risks – for higher education.
- All these factors together suggest that higher education institutions are likely to face ever-increasing pressures to change and adapt. To thrive, or maybe even to survive, institutions will need to be responsive and nimble. And they will need to be outward-looking and well-connected to their local communities, employers, entrepreneurs and business, and the wider world.



A global vision of long-term growth

Getting a clearer picture of what the world will look like in coming decades will be important for anyone doing strategic planning in the higher education sector. It will also help everyone to understand the looming challenges for policy makers and society at large, while there is still time to address them.

Many would argue that it is impossible to know what the world will look like in 50 years time given the pace of technology – after all, many of today's developments could not have been imagined half a century ago, when spreadsheets were literally sheets of paper, calculations were done mentally or using slide rules, and when carbon paper was the technology used for making copies.

But some elements affecting the future are already known. We know that OECD countries already have high levels of public debt and will need to address them. At the same time, populations are ageing, and this will have implications for the labour force, for health and care services and for public finances. And we can expect some major geo-political shifts as emerging economies continue on the path to catching up with the most developed countries.

New long-term economic projections

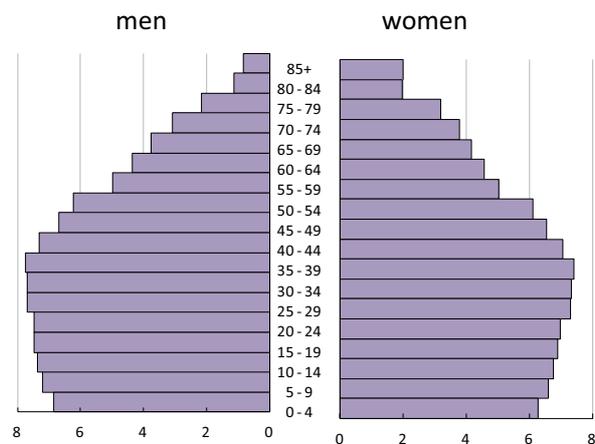
Looking at all these different factors, economists at the OECD have developed an economic model for projecting economic growth in OECD and major non-OECD economies over the next 50 years. This model draws on what is well known about the long-term drivers of economic growth, including developments in education, technological progress and labour force participation.

These scenarios look well beyond the current economic challenges, although many countries will have to go through a long period of adjustment to deal with the consequences of the economic and financial crisis. These adjustments are assumed to take place gradually.

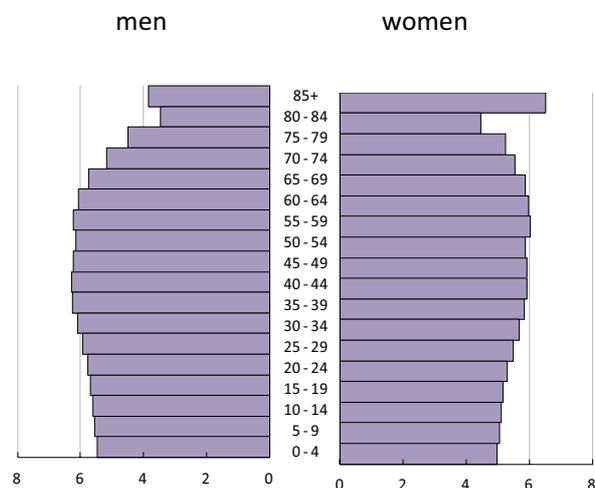
The long-term growth scenarios make some key assumptions, in particular, that public debt-to-GDP

ratios are stabilised and that unused economic capacity is gradually reabsorbed as GDP returns to its potential growth path. Of course, long-run scenarios are inherently speculative, with many levels of uncertainty. Indeed, the baseline scenario presented could be described as an optimistic one.

OECD population age distribution
2000



2050



Major shifts in global GDP

Once the impact of the global financial crisis has worked its way through the system, global economic output (measured by Gross Domestic Product) could expand at around 3% per year over the next 50 years, aided by a rising share of relatively fast-growing emerging countries. But this



growth rate will depend on continued fiscal and structural reforms.

In the baseline scenario, growth in non-OECD countries will slow to around 5% per year by the 2020s and continue to slow further over time. In contrast, trend growth in the OECD area will average around 2% per year.

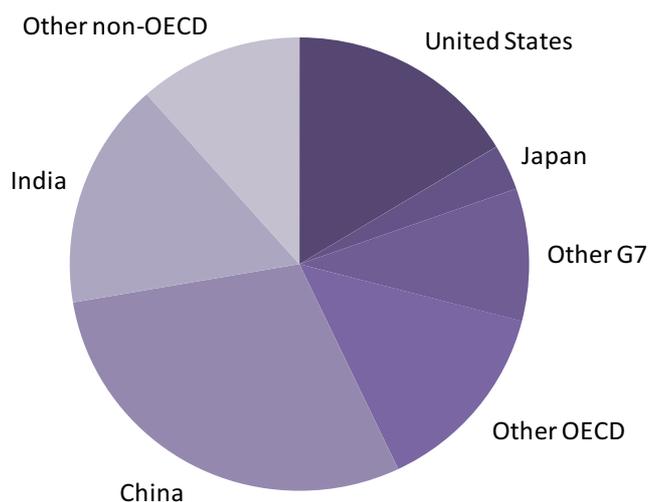
China and India together will soon produce more output than G7 countries altogether and even with slowing growth rates they will have overtaken all of the OECD by 2060

Gaps in living standards will narrow

Notwithstanding fast growth in low-income and emerging countries, large cross-country differences in living standards will persist in 2060.

Income per capita in the poorest economies will more than quadruple by 2060 while China and India will experience more than a six-fold increase. But over the same period the 10 richest economies will see a doubling of their per-capita GDP, and the dispersion in living standards across countries will only shrink by around one-quarter, compared to today.

Global output in 2050



Public debt will need to be stabilised

Many countries, including the two biggest economies today, the United States and Japan, need to stabilise their public debt-to-GDP ratio. The baseline scenario assumes that this will be gradually achieved.

Public budgets will also need to absorb the effects of population ageing and upward pressures on health spending. This will put pressure on other public spending, including education.

Baseline long-term scenario

As percentage of GDP (unless otherwise specified)

	Average 2000-07	2010	2020	2030
United States				
Potential real GDP growth (%)	2.6	1.7	2.3	2.4
Fiscal balance	-2.6	-10.7	-4.1	-4.1
Gross government debt	62	98	115	116
Japan				
Potential real GDP growth (%)	0.7	0.6	1.2	1.4
Fiscal balance	-5.4	-8.4	-7.1	-4.6
Gross government debt	157	193	258	266
Euro Area				
Potential real GDP growth (%)	1.9	1.0	1.9	1.6
Fiscal balance	-1.9	-6.2	-2.0	-2.2
Gross government debt	75	93	96	96
OECD Total				
Potential real GDP growth (%)	2.3	1.6	2.3	2.2
Fiscal balance	-2.1	-7.8	-3.0	-2.8
Gross government debt	74	99	112	113
China				
Potential real GDP growth (%)	10.0	10.2	6.8	4.0
India				
Potential real GDP growth (%)	7.4	7.8	6.8	5.9
Brazil				
Potential real GDP growth (%)	3.1	4.2	4.1	3.5
Potential real GDP growth (%)				
OECD	2.3	1.6	2.3	2.2
non-OECD	6.8	7.5	5.8	4.1
World	2.8	2.7	3.5	3.0

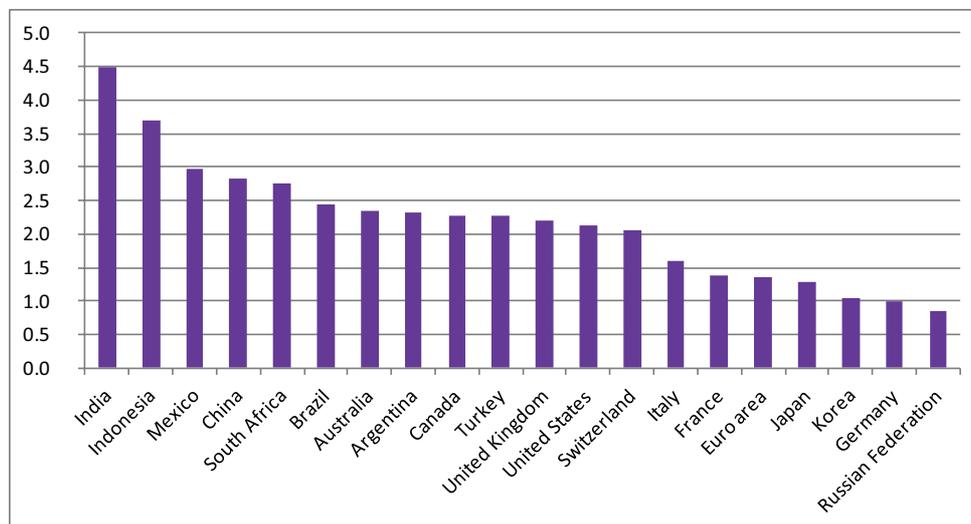
Bolder structural policy reforms would help

Big gains are possible from more ambitious policy changes than those built into the baseline scenario. The economists estimate that more ambitious product market reforms, which raise productivity growth, could increase global GDP by an average of about 10%.

Policies that induce countries to move towards best practice labour force participation could increase GDP by close to 6% on average.



Potential GDP Growth rates 2031-2050 annual average



To learn more about the long term economic outlook

Johansson, Å., et al. (2013), "Long-Term Growth Scenarios", OECD Economics Department Working Papers, No. 1000, OECD Publishing. doi: 10.1787/5k4ddxpr2fmr-en

OECD (2012), "Medium and Long-term Scenarios for Global Growth and Imbalances", *Economic Outlook*, Vol. 2012/1, OECD Publishing, pp. 191-224. doi: 10.1787/eco_outlook-v2012-1-en

To learn more about the OECD Higher Education Programme

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What it means for higher education

Closing the gender gap

How do men and women compare?

- Women have overtaken men in education in OECD countries:
 - ❑ More than four out of five women aged 25-34 years have completed at least upper secondary school and gender gaps are relatively small for many countries. 42% of women aged 25-34 years have completed tertiary education compared with only one-third of men.
 - ❑ At age 15, girls read better than boys and many more boys than girls lack basic reading skills. Boys are more likely to excel at mathematics than girls, but boys are more likely to fail and drop out.
 - ❑ In higher education, nearly 60% of degrees were awarded to women in 2010, but with stark gender differences across subjects, from 77% for education to only 20% for computing. But 46% of all doctorates were awarded to women in 2009, including 34% of doctorates in science and engineering.
- But women are still at a disadvantage in careers and earnings, even if tertiary educated:
 - ❑ Women graduates are less likely to start their careers in professional positions and are more likely to become technicians, even though there are no significant gender differences in university grades.
 - ❑ Gender gaps in earnings for those in full-time work are slowly narrowing, but even women without children earn less than men of the same age: women with children face an even larger penalty.
 - ❑ Women with children may need to take a career break or scale back their hours if affordable, quality daycare is not available, and women still do more unpaid work than men.

What it means for higher education

- Closing gender gaps in entry into tertiary education increasingly depends on improving school outcomes for boys. In addressing these gaps, higher education institutions may now need to pay greater attention to encouraging more young men to pursue tertiary studies, through active outreach.
- Higher education institutions can help to reduce gender biases in subject choices through outreach and mentoring programmes with schools. They can also ensure that all courses welcome and encourage students of both genders and review course materials and practices to eliminate gender stereotypes.
- Higher education institutions could encourage their women graduates to pursue professional careers and ensure that their career counselling services are providing appropriate advice to both male and female students.
- Higher education institutions may also need to look at what they can do within their own institutions to facilitate the careers of women. This could include:
 - ❑ Ensuring that recruitment, tenure and other HR policies do not put women at a disadvantage
 - ❑ Offering mentoring and coaching programmes to help women academics advance their careers
 - ❑ Providing affordable early childhood education and care for faculty (and students)
 - ❑ Promoting more women into senior management roles
 - ❑ Strengthening gender awareness across the institution, with appropriate accountability mechanisms



Women have overtaken men in educational attainment

Over the past few decades, women have caught up and overtaken men in educational attainment. Nearly 83% of 25-34 year old women in OECD countries have completed at least upper secondary school, slightly more than men. But while the overall gender differences seem small, in some countries they are large. Attainment rates for this age group are lower overall in Portugal and Spain and especially so for young men, while for Turkey, around half the men in this age group have completed upper secondary school, compared with only 36% of women.

The gender gap grows significantly larger for tertiary education, with more than 41% of 25-34 year old women holding tertiary degrees compared with less than 33% of men in the same age bracket.

Girls are also performing significantly better than boys for reading at 15 years of age – with the gap, on average corresponding to the equivalent of a whole year’s schooling. Gender gaps in reading are

widest among the lowest performers, as many more boys than girls lack even basic reading skills.

Educational attainment levels

OECD, 2010	25-34 years old		55-64 years old	
	Men	Women	Men	Women
Share of population with at least upper secondary education	80	83	66	58
Share of population with tertiary education	33	42	25	21

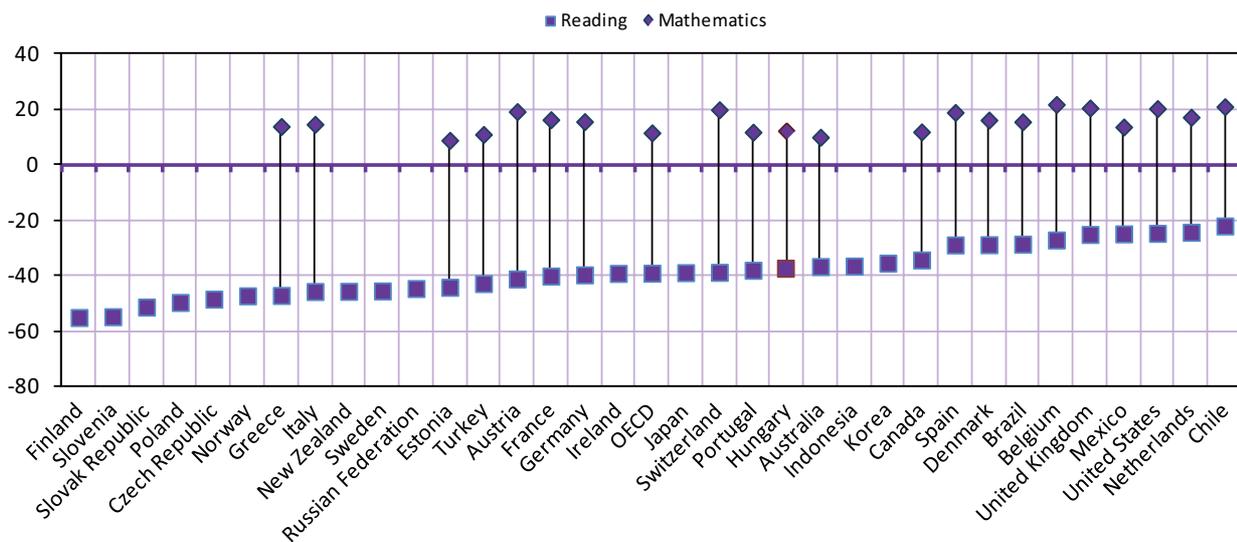
Source: OECD (2012), *Education at a Glance 2012: OECD Indicators*, OECD Publishing, doi: [10.1787/eag-2012-en](https://doi.org/10.1787/eag-2012-en)

In many countries, boys still score higher in mathematics, but the gender gap is smaller and insignificant in some countries. And while there are about the same number of boys and girls who do poorly at maths, boys are more likely than girls to be among the highest performing students for maths.

But boys are also more likely to drop out of secondary education, particularly in high income countries, although girls are still less likely to start secondary education in some parts of Africa and South Asia.

Girls score significantly higher for reading, but boys tend to score higher in mathematics

PISA scores at age 15, boys’ scores minus girls’ scores, where statistically significant
20 points is equivalent to half a year’s schooling



Source: OECD (2009), *PISA 2009 Database*, OECD, <http://pisa2009.acer.edu.au/>.



Women and men study different subjects at tertiary level

Although more women go on to tertiary education than men, their study choices are still likely to be quite different. The aspirations of 15 year olds indicate that one-third of both boys and girls plan to have a science-related career by age 30. But while 12% of boys are planning a career in engineering and computing, less than 2% of girls are.

Three-quarters of education, health and welfare graduates and two-thirds of humanities graduates were women. In contrast, only 20% of computing graduates and 27% of engineering, manufacturing and construction graduates were women.

Share of tertiary degrees awarded to women

OECD, 2010	%
Education	77
Health and welfare	74
Humanities and arts	67
Life sciences	64
Social sciences, business and law	58
Agriculture	54
Services	51
Mathematics and statistics	46
Physical sciences	44
Engineering, manufacturing and construction	27
Computing	20
All fields	58

Source: OECD (2012), *Education at a Glance 2012: OECD Indicators*, OECD Publishing, doi: [10.1787/eag-2012-en](https://doi.org/10.1787/eag-2012-en)

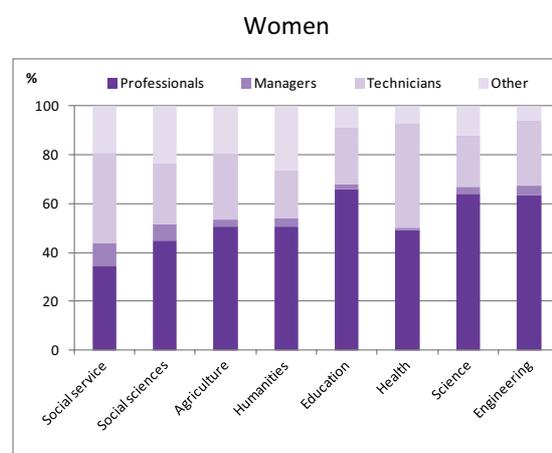
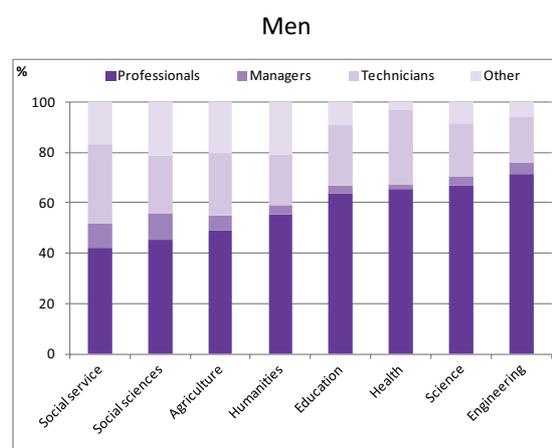
Notwithstanding these sharp gender differences in subject choices, by and large, women and men perform equally well in tertiary education, achieving similar grade distributions in most countries. And women are increasingly continuing to advanced levels, with 46% of all doctorates awarded to women in 2009, including 34% of all doctorates in science and engineering.

Gender gaps for graduates

Young women are more likely to aspire to careers as professionals than young men. But gender gaps emerge as soon as they embark on their career paths with their first job after graduation, with 66% of men going into manager and professional positions compared to 56% of women, while more women than men take jobs as technicians.

For the working age population as a whole, the gender gap in earnings is narrowing, but only slowly. In 2010, the median pay for men in full-time work was 15% higher than for women in full-time work and the gap widened to 20% for those in the top 10% of the earnings distribution. These gaps can only partly be explained by educational attainment and job characteristics.

Where graduates start their career by field of study



Source: OECD (2012), *Closing the Gender Gap: Act Now*, OECD Publishing, doi: [10.1787/9789264179370-en](https://doi.org/10.1787/9789264179370-en)

Women with children under 16 pay a particular gender penalty, even if they are working full-time. This may be partly due to taking a career break to look after young children, which in turn often reflects the availability and cost of childcare and after-school care.

Even among tertiary graduates, women are also more likely to work part-time. Only two-thirds of tertiary educated 35-44 year old working women were full time, compared with 88% of working men.

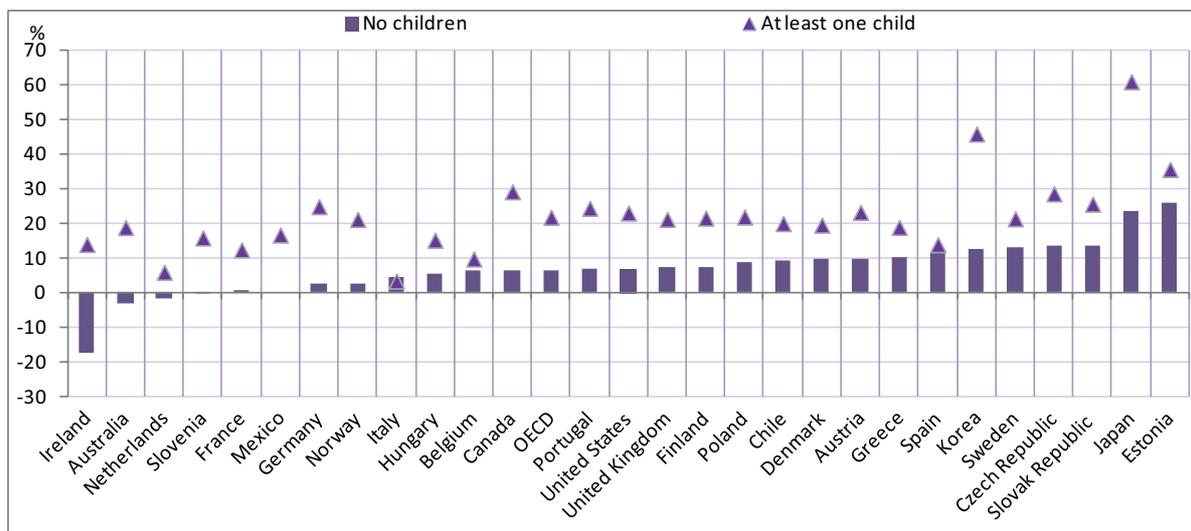


Surveys also show that women are also doing more unpaid work than men, even if they are in full-time work, which may make it harder for women to

climb the career ladder. Indeed, across the OECD, only one third of managers are women.

Gender pay gaps for those in full-time work, with and without children

25-44 years old in full-time work, difference in men and women's median wages divided by male median wages



Source: OECD (2012), *Closing the Gender Gap: Act Now*, OECD Publishing, doi: [10.1787/9789264179370-en](https://doi.org/10.1787/9789264179370-en)

To learn more about gender in education, employment and entrepreneurship

OECD (2012), *Closing the Gender Gap: Act Now*, OECD Publishing, doi: [10.1787/9789264179370-en](https://doi.org/10.1787/9789264179370-en)

OECD (2013), *“Recommendation of the Council on Gender Equality in Education, Employment and Entrepreneurship”*, C/MIN(2013)5/FINAL, OECD, Paris

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What it means for higher education

First Results from the Survey of Adult Skills (PIAAC)

What skills do tertiary graduates hold?

- Higher education pays out to develop and maintain information-processing skills:
 - ❑ People who attain higher education degrees usually demonstrate the highest levels of key information-processing skills.
 - ❑ Higher education graduates strengthen these skills, both during their studies and later, because they are more likely to access demanding jobs that help them maintain and further develop their skills.
- Skills evolve over the life cycle:
 - ❑ Proficiency increases in increments from age 16 to peak around age 30.
 - ❑ There is then a decline in proficiency with older adults generally showing lower skill levels than their younger counterparts.
 - ❑ The best way to maintain skills is to use them: adults who engage more often in literacy- and numeracy-related activities and use ICTs more, both at work and outside of work, have higher proficiency levels. The relationship is even stronger for the use of these skills outside work.
 - ❑ The skill gap between generations varies considerably among countries. This reflects differences in the quantity and quality of education received by older generations, but also suggests that some countries are better than others at mitigating the effect of ageing and maintaining skills over time.
- Skill levels vary widely among higher education graduates:
 - ❑ Between countries, PIAAC results show striking differences in the skills of tertiary degree holders, even if one looks only at the cohort of 16-29-year-olds that recently came out of higher education.
 - ❑ In a few high-performing countries, young adults with secondary education even outperform tertiary graduates from other countries.

What it means for higher education

- PIAAC results assert the importance of mass higher education participation in enhancing average skill levels in the population. But they also point to differences across countries in tertiary graduates' skills, differences that are likely to spark or fuel discussion on the quality and relevance of education in some countries, including higher education. As a result, one can expect growing pressure on institutions to demonstrate their value.
- Yet, PIAAC adds to the existing evidence base that higher education institutions can play an important role in tackling the challenge of lifelong skill development, although this may imply significant changes in their modes of operation and positioning:
 - ❑ HEIs will need to put greater emphasis on bridging skill deficiencies when students enter higher education, as well as pedagogies that foster information-processing skills during higher education.
 - ❑ By paying growing attention to the effective labour market insertion of their graduates, HEIs could contribute both to the productive use of skills in the economy and help prevent individuals' skill loss.
 - ❑ Wherever older adults show low proficiency levels or have lost skills, HEIs can be instrumental in helping them improve or maintain their skills through adult education programmes. This may mean rethinking tertiary admission criteria and delivering programmes in flexible ways.
 - ❑ Increasingly, HEIs will also need to work with employers to develop training programmes. This may entail moving from degree courses to the awarding of certificates and a shift in funding sources with increased cost-sharing with the private sector. In some cases, HE institutions could also play a greater role in re-training and re-skilling unemployed people or those who are not in the workforce.



International survey of adult skills

On 8 October 2013, the OECD launched the first international report on the Survey of Adult Skills (PIAAC). The Survey provides insights on who has key skills and how individuals develop and use their skills at work and at home. Data were collected from around 166 000 adults aged 16 to 65 from 24 participating countries and sub-national regions.

The skills measured by the Survey are literacy, numeracy and problem solving in the context of technology-rich environments. These skills are “key information-processing competencies” that are relevant to adults in many social contexts and work situations. They are considered necessary to fully integrate and participate in the labour market, education and training, and social and civic life.

Higher education is directly related to skill proficiency

The PIAAC results clearly show that the higher the educational attainment an individual has, the higher her/his information-processing skills score is. Adults with a tertiary level of education are more likely to score at high levels of proficiency.

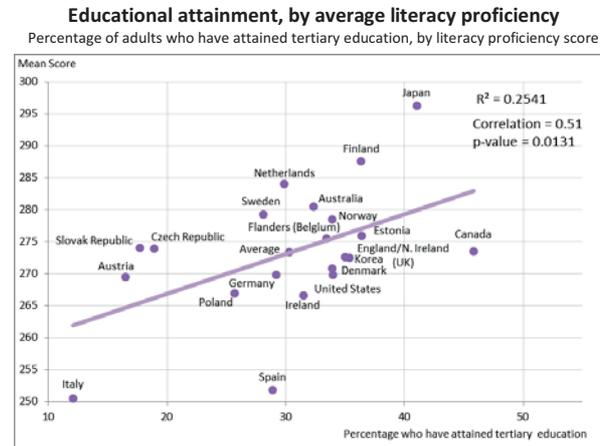
There is a two-way relationship between education and skills. People who are good at maths and/or ICT tend to do well in school and to continue on to higher education. And tertiary-level education strengthens information-processing skills both directly, through the coursework involved, and indirectly, because adults with higher education are more likely to access intellectually demanding jobs that, in turn, help to develop and maintain skills throughout their careers and lives.

Higher education raises the overall average proficiency level

Higher education is an excellent opportunity for developing information-processing skills at an age ideally suited to learning.

Although PIAAC results show considerable variation in proficiency scores among countries, they also indicate that in general, the more higher education graduates there are in the population, the higher the average proficiency levels individuals obtain.

Vice-versa, individuals with greater proficiency in key information-processing skills are more likely to participate in higher levels of education.



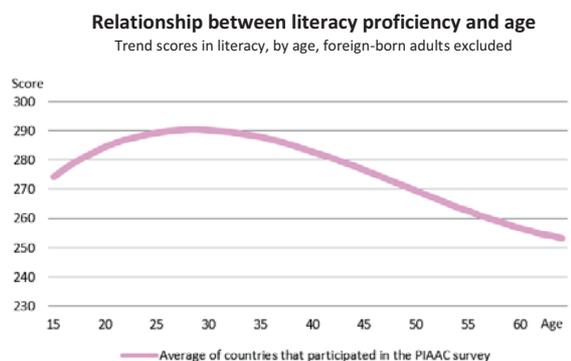
Source: Survey of Adult Skills (PIAAC) (2012), Table A5.3 (L), <http://dx.doi.org/10.1787/888932898617>

Proficiency peaks around age 30

Individuals are all different. Some people develop skills as they age, some lose skills, and some maintain them. However, on average across all countries participating in the PIAAC survey, proficiency peaks at around age 30.

PIAAC shows that people’s proficiency increases in increments from age 16 to around age 30. This is because, in most countries, participation in education and training of significant proportions of young people until their mid- to late 20s continues to add “value” by helping people increase their proficiency in information-processing skills.

The age curve below reflects proficiency levels of different age cohorts rather than individuals over time. It shows that older age groups display lower levels of proficiency than the youngest.



Source: Survey of Adult Skills (PIAAC) (2012), Table A5.2 (L), <http://dx.doi.org/10.1787/888932898598>



Use skills or lose skills

The best way to maintain skills is to use them. Indeed, practice reinforces proficiency, and proficiency facilitates practice. For example, people with already-high skill levels are more likely to gain access to jobs that require still higher skill levels. In turn, holding a job that requires regular use of literacy, numeracy and problem-solving skills helps people develop and maintain these skills.

While older adults generally have lower proficiency than their younger counterparts, the extent of the gap between generations varies considerably among countries, suggesting that policy and other circumstances may weaken skill losses over time.

Adult education can help people stay proficient as they age

In most countries, younger adults have higher proficiency than their older peers. In several countries, however, the proficiency of the youngest cohort is at the same level, or lower, than that of the overall population. The implication for these countries is that the stock of skills is bound to decline over the next decades unless action is taken both to improve skills proficiency among young people and to up-skill or re-skill the existing, older workforce.

In systems where many older adults have lost skills or have low proficiency levels, adult education programmes can be instrumental in helping people improve or maintain their key information-processing skills. Since people who have already attained high levels of education are more likely to take part in adult education, such programmes should also be made accessible and attractive to people who left school or did not go on to higher education earlier in life. There are a number of ways to do this, e.g. through part-time or distance provision and designing education and training alternatives tailored to the needs of employers or certain industries. Higher education institutions can be instrumental in such efforts.

The survey shows that some countries have been much better than others in establishing systems that combine high-quality initial education with opportunities and incentives for the entire

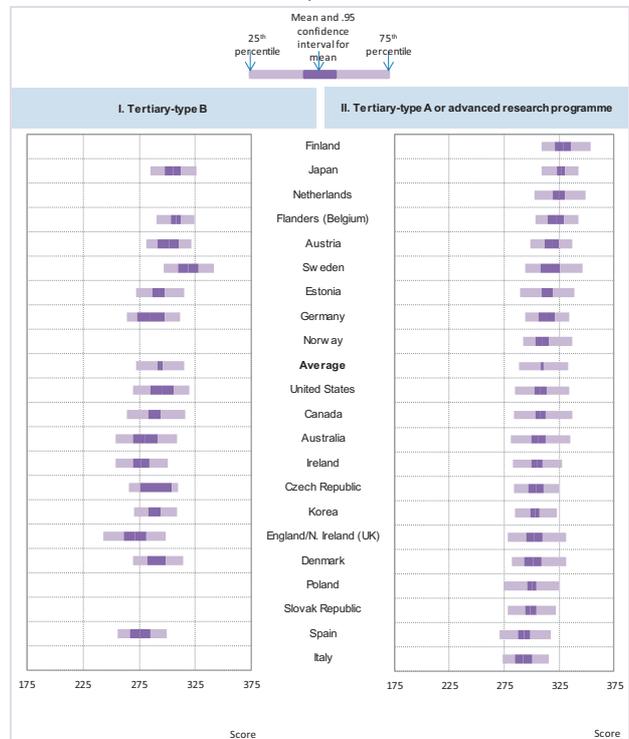
population to continue to develop their skills after completion of initial education and training, whether outside work or at the workplace.

Skill levels vary widely among young adults with tertiary degrees

While higher education graduates show above-average information-processing skills, PIAAC results also show striking differences between countries on the skills of tertiary degree holders, even if one considers only the 16-29 age group, which has recently come out of the higher education system.

Literacy proficiency among young adults with tertiary education

Mean literacy proficiency and distribution of literacy scores, by educational attainment, 16-29 year-olds



Countries are ranked in descending order of the mean literacy score of adults aged 16-29 with tertiary, type A or an advanced research programme

Notes: Tertiary-type B corresponds to the International Standard Classification of Education (ISCED) category ISCED 5B. Tertiary-type A corresponds to ISCED 5A and advanced research programmes correspond to ISCED 6. Estimates based on a sample less than 30 are not shown in panel I and II. The estimate for Tertiary-type B for Finland is based on a sample size very close to 30 and is not shown at the country's request.

Source: Survey of Adult Skills (PIAAC) (2012), Table A5.5a (I), <http://dx.doi.org/10.1787/888932898655>.

In a few high-performing countries, the average proficiency of young adults with only upper-secondary education exceeds that of tertiary graduates in other countries.

It is not only about quality, but still...

One should be cautious not to over-interpret these differences across countries, nor to attribute them



to variations in the quality of higher education among countries.

For one, learning is a cumulative process and the information-processing skills measured by PIAAC can be learnt outside of formal education or before entry into higher education – in this respect the various PISA surveys have repeatedly stressed country variations in the proficiency of 15-year-olds.

Differences in tertiary graduates' skills may also reflect differences in the abilities of individuals accessing higher education. Indeed, it would be expected that the graduates of a highly selective higher-education system would have greater proficiency, in general, than those who graduated from a comprehensive system offering wide access to tertiary study.

Labour market patterns may also contribute to these differences, particularly if young graduates encounter difficulties in finding a job that uses their skills at their fullest potential upon graduation.

Still, policymakers in countries displaying low skill proficiency in their young tertiary graduates should be deeply concerned, given the importance of information-processing skills for the knowledge economy. For some systems, PIAAC results should be a wake-up call to engage in introspection on the quality and relevance not only of higher education, but also of the whole formal learning system and adult education. These results, despite the need for cautious interpretation, also mean that the pressure on institutions to demonstrate their value is unlikely to fade away.

To learn more about adult skills, education and employment

OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264204256-en>

OECD (2013), *The Survey of Adult Skills: Reader's Companion*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264204027-en>

www.oecd.org/site/piaac/

To learn more about the OECD Higher Education Programme

The OECD Higher Education Programme (IMHE) is a permanent forum in which education professionals worldwide can exchange experiences and benefit from shared reflection, thought and analysis in order to address issues that concern them.

The Programme's activities have a global reach and include monitoring and analysing policy making; gathering data; and exchanging new ideas, as well as reflecting on past experience. These activities assist members to contribute to the development of higher education internationally, nationally and locally.

The Programme's strategic position within the OECD provides members with access to the OECD's rich evidence base, as well as to a recognised international network, drawing together higher education professionals, leaders, and policy makers, managers and researchers.

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